REMARKS

The Official Action of August 20, 2008, and the prior art relied upon therein have been carefully studied. The claims in the application remain as claims 1-20, including presently withdrawn claim 12-16 and 20. The applicants respectfully submit that all the claims define patentable subject matter and should be allowed. Favorable reconsideration and allowance are respectfully urged.

Acknowledgment by the PTO of the receipt of applicant's papers filed under Section 119 is noted.

The restriction requirement has been repeated and made final. Applicants respectfully request reconsideration on the basis that claim 12, the main withdrawn claim, requires all the features of claim 1, and thus all the withdrawn claims require all the features of the main elected claim 1. Therefore, if claim 1 is allowable, as applicants believe it is for the reasons pointed out below, the withdrawn claims 12-16 and 20 should also be allowable, whereby the requirements for unity of invention under PCT Rules 13.1 and 13.2 are clearly present.

Withdrawal of the requirement, examination of the presently withdrawn claims, and allowance are all earnestly solicited.

The specification has been objected to as not providing antecedent support for the recitation in claim 7 of "three alkyl or aryl residues", and appropriate correction has been required. The objection and requirement are respectfully traversed.

The critized language of claim 7 is part of the application as filed, and thereby provides its own support. To better conform with 37 CFR 1.75, an appropriate amendment has been made in the specification.

Withdrawal of the objection is respectfully requested.

Another amendment has been made in the specification for purposes of clarity. The language appearing at page 15, line 1 namely "first added later" is literally correct but is not the best idiomatic English, and so that has been changed to "not added until later." If the examiner prefers, the language could be changed to simply "added later".

Claim 17 has been objected to, and the examiner is thanked for noticing the clerical error in question. This has now been corrected as helpfully suggested by the examiner.

Claim 4 has been rejected under the second paragraph of Section 112, as reciting a narrower range within a broader range.

The examiner is correct that the language of claim 4 was not in accordance with U.S. practice, and an appropriate amendment has now been made. No abandonment of any subject matter is intended or made by such amendment, as broader remaining language encompasses the narrow deleted language.

Claim 8 has not been specifically objected to or rejected under Section 112, but the examiner has pointed out that there is insufficient antecedent basis for one of the recitations in claim 8.

Again, the examiner is correct, and an appropriate amendment has been made in claim 8, support being found for example at page 7, line 18.

Claims 1-5 and 8-11 have been rejected as obvious under Section 103, from Kojima et al EP 0885920 (Kojima) in

view of Frank USP 5,217,762 (Frank). This rejection is respectfully traversed.

First, applicants respectfully note that except for the main reference, in general the applied prior art does not primarily deal with polyamides to which the present invention is directed, but instead is directed to liquid crystalline polymers, polycarbonate or polysulphone, or amino silicates for thixiotropic treatment of organic liquids. It should be understood that what is applied in the case of one type of material or even one type of polymer will not necessarily give an equilavent or similar result in conjunction with a different polymer.

Of course, Kojima the main reference, does relate to a polyamide resin composition, e.g. nylon 6 homopolymer, which comprises a layered silicate said to be uniformly dispersed therein. Nevertheless, there are significant differences, these being at least partially acknowledged by the PTO in its reliance on Frank as a secondary reference.

The Examiner has correctly pointed out that in the method of Kojima, the concentration of the layered silicate in the first stage is only 1-17% (i.e. 17% at the most). In contrast, the concentration of the layered silicate according to the present invention is 20-40% in the first stage. There

is not the slightest overlap, but a significant difference to be noted here.

Applicants would like to expressly point out that it is not at all obvious to select a higher concentration of the layered silicate in the first stage as alleged in the rejection. In fact, it is physically impossible that a mixture with a higher concentration has the same physical properties as a mixture with a lower concentration. Even if in the second stage the "masterbatch" were to be diluted in a way that the end products of Kojima and the present invention define similar or overlapping concentration of layered silicates, the physical properties of the resulting molding materials would not be the same. To the contrary, there would be considerable differences in quality that are based on the present invention.

Moreover, the present invention provides process advantages, i.e., the method according to the present invention provides an economical advantage as the completion of the polyamide/silicate mixture to the desired end concentration can be carried out in one single extrusion process. The method steps a), b), and c) of the amended claim 1 are all carried out within the same double screw extruder. Even the last step d) is desirably carried out in an integrated way at the end of the extruder to the still melted

polyamide nanocomposite prior to extruding the finished melt mass through the extruder nozzle, followed by cooling and granulation of the polyamide nanocomposite.

An important disclosure in this regard can be found in the specification as filed (see page 14, second paragraph). In comparison to this, the method of Kojima needs two extrusion processes as carried out in two separate extruders. The PTO acknowledges as pointed out (see the office action, paragraphs 7 and 8) that Kojima, in a first step, heats and mixes polyamide and layered silicate, the mixture then being cooled and granulated. While doing it this way, the whole heat content of the melt is lost.

In practice, granulate according to Kojima has to be dried and then brought to a second (a two screw) extruder, where the heat for melting has to be added again. With such two screw extruder, the polyamide/silicate mixture with at most 17 wt.-% layered silicates in Kojima is mixed with a second portion of polyamide in order to prepare the desired end concentration. A second granulation step is then required.

Thus, when comparing the Kojima method with the elegant and simplified method according to the present invention, it is to be noted that Kojima's method is more cumbersome, needs two extruders, wastes energy, and - due to a

two-fold melting of the compound - is less gentle to the compound material, the polyamide of which may undergo some thermo oxidative damage during each melting process.

Applicants note that even Kojima, while being an expert in this field of technology, obviously did not observe possible improvements to his, in several ways, disadvantageous and uneconomic method. It thus is respectfully concluded that for the person of ordinary skill it would not be obvious to propose such a clever and efficient method according to the present invention, which unexpectedly differs in a number of elements from the method of Kojima. In consequence, the method according to the present invention and as defined in the amended claim 1, incorporating features from claim 5, must be regarded as being non-obvious.

The Examiner points to some particular materials (see second part of paragraph 7) that are similar and also points to embodiments of car parts, and then asserts that the present invention is practically the same as Kojima. However, the fact is that in the present application, no product is claimed. The claimed method would not have been obvious even if the end product were the same, because of the alternative and more economical production method.

Moreover, the claimed method according to the present invention has even higher inventiveness, because it

produces (totally unexpectedly for a skilled person) a product with improved material properties. These improved material properties enable the utilization of the resulting polyamide/silicate compound in more ambitious methods beyond those possible with the Kojima product, such as the production of light reflectors.

The PTO agrees that Kojima inserts in a first method step both materials, the polyamide and the layered silicate together and simultaneously into the first extruder (see paragraph 8 of the office action). The awareness that this method step of Kojima leads to an important disadvantage in the expected homogeneous distribution of the layered silicate within the polyamide matrix is a result of the cognition of the inventors of the present invention. Two key sentences in the present application (see page 13, last paragraph) point to this aspect:

"The best distributions were achieved through the addition of the mineral into the melt. If the mineral is added during the melting phase of the polyamide granulate, there is the danger that silicate aggregates could form."

In Kojima's method, the mechanical pressure between the granulate grains and the screw serves to compact the layered silicate into agglomerates, which cannot be dissolved in the polyamide melt later and then appear as coarser

particles. Thus, the formation of such aggregates happens when carrying out Kojima's method, because all the layered silicate is present even prior to the time when melting of the polyamide is complete. Most probably, Kojima was aware of this problem and he limited the amount of layered silicates to be 17 % at the most. The skilled person, when reading Kojima, will only learn to utilize such a limitation in the silicate concentration as a way to minimize the damage. However, such skilled artisan will not learn the basic reason behind Kojima's method, which is another indication of the presence of a considerable inventive step in the method as defined by the amended claim 1.

Despite such limitation to maximal 17 %, the quality of the polyamide nanocomposites of Kojima is not optimal. This clearly is demonstrated by the applications preferred by Kojima (see end of paragarph 7 of the office action). In contrast, the present invention provides for improved surface qualities (see page 14, beginning of second paragraph). Kojima's proposed applications are not directed to situations where the surface quality has highest priority. "Light covers", for example, are not to be mistaken for "light reflectors", because such light covers are used for dimming light, an uneven surface even being of some advantage.

A mirror-like light reflector, however, may not comprise coarse particles that cause a rough surface; thus, Kojima's method produces polyamide nanocomposites that cannot be utilized for the production of such light reflectors. In contrast, the high quality surfaces for light reflectors are achieved when using the polyamide nanocomposites produced by the method of the present invention.

In paragarphs 11 and 12 of the office action, the PTO describes further inventive elements of the method according to the present invention as being trivial. However, these additional elements are expressions of the desire to even further enhance the quality of the surfaces achievable by polyamide nanocomposites produced by the method of the present invention. There is no surprise that Kojima has not envisaged such improvements, as Kojima did not target a high surface quality, and provides no instructions as to how to achieve same. In contrast, the method according to the present invention utilizes the finest layered silicates and the melt filtration of the finished polyamide nanocomposite in order to eliminate single coarse particles and/or dirt particles.

A skilled person knowing the patent of Kojima would have had no reason to combine this knowledge with the patent of Frank, because the question of enhancing the surface quality cannot be an issue forming the basis of Kojima. In

addition, the patent of Frank belongs to a technical field that is far away from Kojima and also from the present invention: it does not deal with polyamides, nor with layered silicates or nanocomposites and double screw extruders. The utilization of the filter according to Frank is for reducing flow irregularities, but not for filtering out coarse or dirt particles.

Thus, Frank is respectfully deemed to be completely irrelevant to the present invention. Further in this regard, the rejection is incorrect when it mentions polyamides as an example for the polymers of Frank, as this patent appears to be completely silent about polyamides; in addition, polyamides are not at all liquid crystalline. Attention is respectfully invited to the Frank patent at col. 1, lines 16-69, where liquid crystalline polymers are defined as fully aromatic polyesters, such as polyester carbonates, polyester amides, polyester imides and similar polymers or block polymers having a block based on these systems, but not polyamides.

Additionally, and of course this is very important, Frank does not make up for the deficiencies of Kojima as pointed out above, and has not been cited for that purpose. Therefore, even if the combination of Kojima in view of Frank were obvious, the resultant reconstructed Kojima would not

correspond to even claim 1, let alone 2-5 and 8-11 which depend from and incorporate the features of claim 1.

Withdrawal of the rejection is in order and is respectfully requested.

Claims 17 and 18 have been rejected as obvious under Section 103 from Nagashima et al USP 5,910,560 (Nagashima) in view of Kojima and further in view of Frank. This rejection is respectfully traversed.

Nagashima does not make up for the deficiencies of the proposed combination of Kojima and Frank, as pointed out above, and has not been cited for that purpose.

Claims 17 and 18 depend from and incorporate the subject matter of claim 1. Therefore, even if the combination were obvious, respectfully not conceded, the resultant combination would not reach even claim 1, let alone claim 17 and 18.

Withdrawal of the rejection is in order and is respectfully requested.

Claim 19 has been rejected as obvious under Section 103 from Nagashima in view of Kojima, Frank and Catlin USP 5,819,408 (Catlin).

Claim 19 depends from and incorporates the subject matter of claim 1. Catlin and Nagashima have not been cited to make up for the deficiencies of the proposed combination of Kojima in view of Frank as pointed out above, and indeed do not do so. Therefore, even if the combination were obvious (respectfully not admitted), such a reconstructed Nagashima would not reach even claim 1, let alone claim 19.

Withdrawal of the rejection is in order and is respectfully requested.

Claim 7 has been rejected under Section 103 as obvious from Kojima in view of Frank and further in view of Oswald USP 4,136,103 (Oswald). This rejection is respectfully traversed.

Oswald has not been cited to make up for the deficiencies as pointed out above with respect to the rejection based on Kojima in view of Frank, and Oswald does not do so. Claim 7 depends from and incorporates the subject matter of claim 1. Accordingly, even if the proposed combination were obvious (respectfully not admitted), the resultant combination would not even reach claim 1, let alone claim 7.

Withdrawal of the rejection is in order and is respectfully requested.

Claim 8 has been rejected as obvious under Section 103 from Kojima in view of Frank and further in view of Vaia USP 6,225,374 (Vaia). This rejection is respectfully traversed.

Claim 8 depends from and incorporates the features of claim 1. As pointed out above, Kojima in view of Frank does not met claim 1. Vaia does not make up for the deficiencies pointed out above with respect to the rejection of claim 1 based on Kojima in view of Frank, and has not been cited for that purpose. Therefore, even if the combination were obvious (respectfully not admitted), the proposed combination would not even meet claim 1, let alone claim 8 which incorporates claim 1.

Withdrawal of the rejection is in order and is respectfully requested.

Claim 6 has been rejected as obvious under Section 103 from Kojima in view of Frank, Vaia and Oswald. This rejection also is respectfully traversed.

Even if it were obvious to combine all of these references to provide a reconstructed Kojima, and applicants respectfully submit that it would not have been obvious to do so, the resultant reconstructed Kojima would not even reach claim 1, let alone claim 6 which incorporates the features of

claim 1. Applicants respectfully repeat by reference the commentary made above.

Withdrawal of the rejection is in order and is respectfully requested.

The prior art documents of record and not relied upon by the PTO have been noted, along with the implication that such documents are deemed by the PTO to be insufficiently material to warrant their application against any of applicants' claims.

Applicants believe that all issues raised in the Official Action have been addressed above in a manner that should lead to patentability of the present application. Favorable consideration and early formal allowance are respectfully requested.

Respectfully submitted,

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